International Journal of Surgery (2008) 6, e89–e91

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INTERNATIONAL JOURNAL OF SURGERY
www.theijs.com

Relaparoscopy in the management of acute abdomen due to localized ischemic bowel: A novel technique — Case report

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Available online 22 April 2007

KEYWORDS
Acute abdomen;
Ischemic bowel;
Relaparoscopy

Abstract Diagnostic and therapeutic laparoscopy for acute abdomen has been widely reported in the literature. Diagnostic laparoscopy has an accuracy of 99.08% and 1% morbidity. The usefulness of relaparoscopy in acute abdomen has also been reported. We describe a patient with acute abdominal pain who underwent diagnostic laparoscopy. Ischemic segment of small bowel was found and it was decided not to resect but to go in for a second look 48 h later. Relaparoscopy revealed the ischemic segment to regain vascularity, so nothing further was done. The patient recovered well and was discharged on the 6th postoperative day. Laparotomy was avoided both the times, thus sparing the patient of morbidity and prolonged hospital stay. Other advantages are lower risk of incisional hernias, less postoperative pain and early return to normal activity. Laparoscopy and relaparoscopy certainly has a definite role in the management of acute abdomen, at least diagnostic if not therapeutic.

Introduction

The term acute abdomen encompasses a spectrum of medical and surgical conditions ranging from the trivial to the life threatening that require hospital admission, investigation and treatment. The immediate goal is to ascertain if emergency surgery is indicated. Laparoscopy has become an important technique in the management of patients with acute abdominal pain. The diagnostic accuracy spares many patients an unnecessary laparotomy and also allows definitive laparoscopic therapy. Laparoscopic surgery of selected acute abdominal conditions has been shown to be highly effective, and the accuracy of laparoscopic diagnosis is the same as laparotomy.[1,2] Diagnostic laparoscopy as a diagnostic tool has an accuracy of 99.08% with only 1% morbidity.[3] It allows to establish a prompt and accurate diagnosis in patients with acute abdomen avoiding therapeutic delay and unnecessary hospital observation. We present a case of acute abdomen managed by laparoscopy.

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doi:10.1016/j.ijsu.2007.04.006

Case report

The patient was a 47-year-old lady who presented with severe abdominal pain and distension of 2 days duration. Physical findings: there was diffuse tenderness all over the abdomen, she had 1 episode of vomiting, absent bowel sounds, she had not passed flatus for 2 days, mild dehydration was present, febrile, she was toxic, temperature was 100 °F, pulse rate was 109/min, blood pressure was 90/64 mmHg. The white cell count was 15 200; haemoglobin was 9.2 g%; platelet count was 85 000; sodium level — 135; potassium level — 3.6; chloride level — 95; bicarbonate — 23 mEq/L; blood sugar — 112 mg/dl; urea — 50 mg/dl, protein — 6.8 g/dl; creatinine — 1.9 mg/dl; calcium — 7 mg/dl and magnesium — 2.0 mg/dl. Clinical diagnosis of acute abdomen — either due to intestinal obstruction or hollow viscus perforation — was made. After admission in the intensive care room, fluid and electrolyte imbalances were corrected; third generation cephalosporin was given; and blood grouping and typing were done. Plain radiogram of abdomen (erect position) showed 3 fluid levels and distended small bowels. Ultrasonogram (USG) of abdomen showed distended bowel loops and some free fluid in the peritoneal cavity; CT scan revealed a narrowed portion of ileum with dilated bowel loops. Abdominocentesis was negative for pus or blood. Since we could not get a convincing diagnosis, we decided to go ahead with diagnostic laparoscopy. Pneumoperitoneum was established using Hasson's technique. A 10-mm port was created in the umbilicus and telescope introduced inside. Dilated small bowel loops were present and their entire length was carefully inspected. To our surprise, we found a segment of pregangrenous ileum 35 cm from the ileocecal junction (Fig. 1). The length of the pregangrenous segment was 5 cm. There was a band across the ileum causing the obstruction and vascular compromise. The band was cut with bipolar scissors. The affected segment had mild peristalsis and the dark color changed a little on the administration of 100% oxygen, so the decision was taken not to resect the segment and go in for a second look after 48 h. A wide-bore drainage tube was kept in the right paracolic gutter and port sites closed. The patient was managed in the intensive care room for 48 h where she seemed to improve. She was kept nil per oral; intravenous fluids; intravenous antibiotics and analgesics were administered. After 48 h, she was taken up for relaparoscopy. This time, the pneumoperitoneum was created by insufflating CO_2 through the drainage tube (Fig. 2). Relaparoscopy revealed the diseased segment had indeed improved as evidenced by color changes and peristalsis (Fig. 3). Nothing further was done and the drainage tube was retained and removed 2 days later. She passed flatus on the 2nd postoperative day (POD) signaling the return of bowel movements. She was allowed liquid diet followed by soft diet the next day. The patient was discharged on the 6th POD. She was followed up after 1 month, 6 months and at 32 months, with no similar episodes occurring.

Figure 2 Second-look laparoscopy — pneumoperitoneum through the drain tube.

Figure 1 Segment of ischemic bowel at diagnostic laparoscopy.

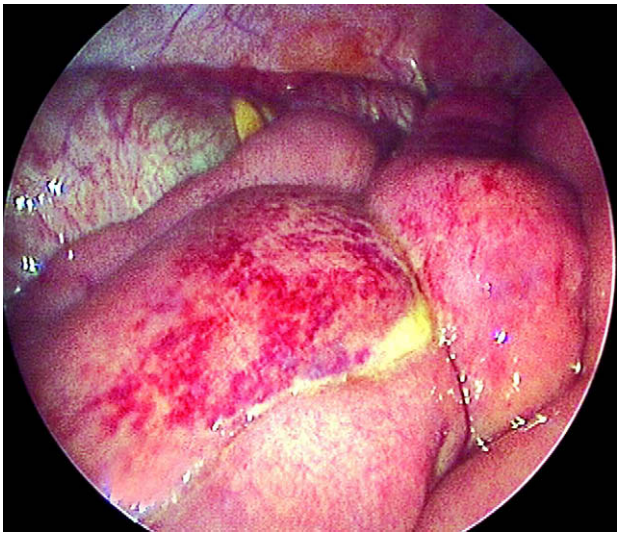

Figure 3 Revascularized bowel seen on relaparoscopy.

Discussion

Abdominal pain accounts for 5—10% of all emergency department visits or 5—10 million patient encounters in the United States annually.[3] CT scan and USG now occupy the central imaging role in this situation. USG is useful for patients with acute abdominal pain because it provides rapid, safe, and cheap evaluation. Diagnostic and therapeutic laparoscopic techniques have an important place in the management of patients with acute abdominal pain. Because the pain results from the ischemia in cases of gangrenous intestine and not from peritonitis, these patients have no abdominal tenderness, guarding, or rebound tenderness. Therefore, abdominal pain out of proportion to the abdominal physical findings should raise a question about this diagnosis. The abdomen may be quiet to auscultation because ischemia stops bowel motility promptly, depending on the amount of ischemic bowel. The role of laparoscopy in acute abdomen has been well documented, though controversial.[4] The use of laparoscopy has become more common and more effective in the management of acute abdominal pain. Survival after acute vascular ischemia depends on a second-look laparotomy to detect extending bowel compromise and to verify the integrity of the ischemic bowel. Laparoscopy results in a decreased rate of negative laparotomy and associated complications. The choice of laparotomy or laparoscopy depends on the surgeon's experience and the probable diagnosis. Some factors such as multiple prior laparotomies, hemodynamic instability, or advanced abdominal distention preclude laparoscopy. In 1975, Sugarbaker and associates demonstrated the utility of laparoscopy in the management of patients with acute abdominal pain.[5] Since then laparoscopic surgical skills and technology have improved dramatically, and the usefulness of laparoscopy in managing patients with acute abdominal pain is generally recognized and accepted. A Chinese case report highlighted a similar situation like our patient, where there was ileal obstruction due to a band that was divided laparoscopically.[6] In a study of 255 patients with acute abdomen, laparoscopy provided a definitive diagnosis in 93%, operative mortality was 2%.[7] Certain non-surgical conditions can also cause acute abdominal pain. Again, in these situations, laparoscopy avoids unnecessary laparotomy. Our patient was ambulant on the first postoperative day itself; she required only non-opiate analgesics for pain relief. Hasson's technique was done initially to avoid injury to the dilated bowels. Since the pneumoperitoneum for the second-look laparoscopy was created by insufflating through the drainage tube, bowel injury during relaparoscopy was avoided. Another innovative technique was described in which 2 laparoscopic trocars were left in the abdominal wall after the first surgery and second-look laparoscopy was done through these trocars without anaesthesia.[8] Because predicting postoperative intestinal viability remains difficult, second-look laparotomy has been advocated to improve outcomes. Recently, laparoscopy has emerged as an alternative to laparotomy for the diagnosis and treatment of preoperative and postoperative bowel ischemia. A review of the literature reveals that to date, 68% of patients had unnecessary laparotomies.[9] Second-look laparoscopy has been shown repeatedly to be a safe alternative to laparotomy.[10] It is simple and reduces a negative second-look laparotomy, especially in critically ill patients. Laparoscopy, both diagnostic and therapeutic, plays an important role in the management of acute abdomen. Second-look laparoscopy has also been shown to further improve the efficacy of management by avoiding unnecessary laparotomies.

Conflict of interest: No.

Funding: No.

Ethical approval: Not applicable.

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